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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,258	01/28/2000	Xin Li	723-824	2008

27562 7590 09/15/2003

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EXAMINER

GOOD JOHNSON, MOTILEWA

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 09/15/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/493,258

Applicant(s)

LI ET AL.

Examiner

Motilewa A. Good-Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-14 and 16-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,11-14,16-21,24-27 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 9,10,22,23 and 28-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in responsive to the following communications: Application, filed on 01/28/2000; IDS, paper #6, filed on 06/08/2000; IDS, paper #9, filed on 10/12/2001; Preliminary Amendment A, filed 01/28/2000; Amendment B, filed 12/16/2002; Amendment C, filed 05/27/2003.
2. Claims 1 and 3-34 are pending in this application. Claims 1, 14, 27 and 32-34 are independent claims. Claim 2 and 15 has been canceled. Claims 1, 14, 27 and 33 have been amended.
3. The present title of this application is "Incremental Interlace Interpolation for Texture Morphing" (as originally filed).

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/22/2003 has been entered.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1, 3-8, 11-14, 16-21, 24-27 and 32-34 are rejected under 35

U.S.C. 102(a) as being anticipated by Blanz et al., *A Morphable Model for the Synthesis of 3D Faces*, ACM SIGGRAPH 1999, pages 187-194.

As per independent claim 1, a method for morphing and displaying a texture comprising: pre-decomposing at least some texels of a texture map into respective texel color components; (Blanz discloses the texture represented by color components, page 189, section 3) predetermining . . . at least one incremental morph parameter corresponding to said respective texel color components; (Blanz discloses incremental morph parameters calculated by adding to and subtracting from the morphable model, page 189, section 3) using said incremental morph parameter during real-time imaging to incrementally interpolate said texel color . . . ; (Blanz discloses a morphable face model which morphs in increments, page 189, section 3) and displaying an image based at least in part on said intermediate morph texel color state, wherein said incrementally interpolating comprises repetitively adding said predetermined incremental morph parameter to said predetermined texel components to produce a corresponding sequence of intermediate morph texel components states. (Blanz discloses in figure 2)

With respect to dependent claim 3, incrementally interpolating comprises using an integer arithmetic calculation to repetitively increment or decrement said plural texel

components based on said predetermined incremental morph parameter. (Blanz discloses an algorithm that adjusts the model parameters automatically, page 188, section 1)

With respect to dependent claim 4, predetermining calculates said incremental morph parameter as the amount of change in said texel components for each successive time period within a morphing procedure, and said incrementally interpolating changes said texel components . . . (Blanz discloses a model of texture variations between faces in which a morphable face model is an extension of the interpolation technique is introduced, page 188, section 1.1)

With respect to dependent claim 5, successive time periods comprise image frame times. (Blanz discloses extending the database by incorporating additional examples in which time is represented, page 193, section 7)

With respect to dependent claim 6, incrementally interpolating conditions said change in said texel components based on which of said successive time periods has occurred within said morphing procedure to minimize the number of calculations required to morph said texture. (Blanz discloses data reduction applied to shape and texture to reduce redundancy and save computation time, page 193, section 7, therefore making it inherent to add time data to reduce the number of calculations)

With respect to dependent claim 7, selectively adding integers to or subtracting integers from said integer portions to reduce approximation errors in the context of integer arithmetic operations. (Blanz discloses in figure 2, the deviation is added to or subtracted from the average, page 189)

With respect to dependent claim 8, incremental interpolation comprises incrementing or decrementing said texel components by integer approximations of said determined morph parameters, and compensating for approximation errors by performing at least one floating point operating to set said texel components to target texel component values. (Blanz discloses instead of computation of derivatives, using a global mapping of matching error into parameter space can be used, page 193, section 7)

With respect to dependent claim 11, calculating a frame counter corresponding to said texel components, and selectively incrementing or decrementing said texel components in response to said frame counter. (Blanz discloses data reduction applied to shape and texture to reduce redundancy and save computation time, page 193, section 7)

With respect to dependent claim 12, including the preliminary step of storing said decomposed texel components in separate texel component arrays. (Blanz discloses the texture values represented by a texture vector, page 189, section 3)

With respect to dependent claim 13, texel components comprise red, green, and blue color values and an alpha value. (Blanz discloses the texture vector contains the RGB color values of the corresponding vertices parameterized by coefficients a and b, page 189, section 3)

As per independent claim 14 and dependent claims 16- 21 and 24-26, they are rejected based upon similar rational as above independent claim 1 and dependent claims 3-8 and 11-13 respectively.

As per independent claim 27, it is rejected based upon similar rational as above independent claim 1.

As per independent claim 32, an efficient texture morphing method for morphing and displaying textures using a real time interactive 3D graphics system . . . including:

- a) before real-time imaging, pre-decomposing said texels into plural texel components and precalculating incremental morph parameter values . . . to provide integer results and calculating period counter values . . . ; (Blanz discloses incremental morph parameters, represented by shape and texture vectors with color components, calculated by adding to and subtracting from the morphable model, page 189, section 3)
- b) at least in partial response to user interaction with said controls, changing texel component values at a first periodic frequency based on said integer results; (Blanz discloses data reduction applied to shape and texture to reduce redundancy and save computation time, page 193, section 7, therefore making it inherent to add time data to reduce the number of calculations)
- c) at least in partial response to said period counter, further changing said texel component values at a second periodic frequency less than said first periodic frequency to compensate for approximation errors . . . (Blanz discloses instead of computation of derivatives during each iteration, using a global mapping of matching error into parameter space can be used, page 193, section 7) and generating an image display based at least in part on said changed and further changed texel component values.

As per independent claim 33, it is rejected based upon similar rational as above independent claim 32. Blanz further discloses extending the face model by interactive animation, page 193, section 7.

As per independent claim 34, it is rejected based upon similar rational as above independent claim 1. Blanz further discloses a database for storage of the information to perform incremental morph calculations, section 2.

Allowable Subject Matter

7. Claims 9, 10, 22, 23 and 28-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 3-14 and 16-34 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.



Motilewa A. Good-Johnson
Examiner
Art Unit 2672

mgj
September 4, 2003